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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,214	10/09/2007	Gerhard Hirmer	016894-03301	7435

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EXAMINER	
CHEN, SHIH CHAO	
ART UNIT	PAPER NUMBER
2821	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,214	HIRMER ET AL.	
	Examiner	Art Unit	
	Shih-Chao Chen	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining

compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-10 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claim 1, the phrase "may be" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "may be"), thereby rendering the scope of the claim(s) unascertainable.

5. Claims 6 and 9-10 recite the limitation "the ferroelectric thin film layer" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

6. Claims 5 and 7 recite the limitation "the metallic foil" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Romanofsky (U.S. Patent No. 6,292,143).

Regarding claim 1, Romanofsky teaches in figure 1 a frequency tunable ferroelectric microwave component comprising: (a.) a flexible metallic foil substrate [12]; (b.) at least one crystalline ferroelectric layer [16]; and (c.) a patterned thin metal layer [18] such that a controllable DC bias potential [24] may be applied between the patterned thin metal layer and the metallic foil substrate.

Regarding claim 2, Romanofsky teaches in figure 1 2 the ferroelectric microwave component of Claim 1, wherein the at least one crystalline ferroelectric layer [16] is selected from the group consisting of a lead lanthanide titanate, lead titanate, lead zirconate, lead magnesium niobate, barium titanate, lead lanthanum zirconate titanate, lead zirconate titanate, barium strontium titanate, lanthanum- modified lead zirconate titanate, bismuth zinc niobate and bismuth strontium tantalite (See col. 4, lines 22-27).

Regarding claim 3, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 2, wherein the at least one crystalline ferroelectric layer [16] comprises lead zirconate titanate, barium strontium titanate, lanthanum-modified lead zirconate titanate, bismuth zinc niobate and/or bismuth strontium tantalite (See col. 4, lines 22-27).

Regarding claim 4, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 3, wherein the at least one crystalline ferroelectric layer [16] is selected from the formula: (a.) $(Ba_{1-x}Sr_x)T_iO_3$, wherein x is between from about 0.1 to about 0.9, y is from about 0.95 to about 1.25 and z is between from about 0 to about 0.15 (See col. 4, lines 22-27).

Regarding claim 5, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein the metallic foil [12] is selected from the group consisting of aluminum, brass, nickel alloy, nickel-coated copper, platinum, titanium and stainless steel foil (See col. 4, lines 11-14).

Regarding claim 6, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein the ferroelectric thin film layer [16] has a thickness in the range from between about 50 nm to 1000 nm (See col. 4, lines 22-23).

Regarding claim 7, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein the metallic foil [12] has either a flat surface, textured surface or macroporous surface (See FIG-1).

Regarding claim 8, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein the flexible metallic foil substrate [12] has a thickness in the range between about of 10 and 300 microns (Examiner Note: it is inherent to have the flexible metallic foil substrate [12] has a thickness in the range between about of 10 and 300 microns, because it is known in the art).

Regarding claim 9, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein the ferroelectric thin-film layer [16] consists of multiple layers of dielectric materials in a regular or irregular superlattice structure (See FIG-1).

Regarding claim 10, Romanofsky teaches in figure 1 the ferroelectric microwave component of Claim 1, wherein a barrier layer [14] is interposed between the flexible metallic foil substrate [12] and the ferroelectric thin-film layer [16].

Regarding method claims 11-17, the apparatus discussed above would perform the claimed method.

Regarding claim 18, Romanofsky teaches in figure 1 a method of an antenna [10] which comprises: (a.) sol-gel depositing onto a flexible metallic foil substrate [12] a precursor composition of a ferroelectric thin-film layer [16] and heating until a ferroelectric thin-film layer is obtained (See col. 4, lines 22-34); and (b.) forming onto the ferroelectric thin-film layer a patterned microstrip patch [18] having associated a bias connection [24] and radial stub [26].

Regarding claim 19, Romanofsky teaches in figures 1 and 6a-6c a method of manufacturing a ferroelectric antenna which comprises: (a.) depositing onto a flexible metallic foil substrate [12] for ground plane a precursor composition for a ferroelectric thin-film layer [16] and heating until a ferroelectric thin-film layer is obtained; and (b.) forming onto the ferroelectric thin-film layer a patterned thin metallic microstrip patch [18] having associated bias connections [24] and radial stubs [26] (See FIG. 6a-6c).

Regarding claim 20, Romanofsky teaches in figure 1 the method of Claim 19, wherein the thickness of the ferroelectric thin film layer [16] is between from about 50 nm to about 1000 nm (See col. 4, lines 22-23).

Regarding claim 21, Romanofsky teaches in figures 1 and 6a-6c an antennae [10] comprising the ferroelectric microwave component of Claim 1.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (571) 272-

1819. The examiner can normally be reached on Monday-Thursday from 7 AM to 5:30 PM, Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shih-Chao Chen
Primary Examiner
Art Unit 2821

SXC
July 27, 2009
/Shih-Chao Chen/
Primary Examiner, Art Unit 2821